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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,968	01/22/2002	Dennis P. Long	94004-88216	5193

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EXAMINER

CAMPBELL, THOR S

ART UNIT

PAPER NUMBER

3742

DATE MAILED: 02/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/053,968

Applicant(s)

LONG ET AL.

Examiner

Thor S. Campbell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____.                                   |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant claims the sensor in the flow path and within the inner tube it is not clear how this can be the case. Claim 23 is not further treated on the merits.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8-11, 13-14, 17, 19, 20, 22, 24-27, and 29-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Lehrke (US 4501952).

Lehrke discloses a fluid heat exchanger comprising an inside tube, a concentrically surrounding outside tube defining an small passageway of annular cross section, a temperature control system comprising a thermistor in the fluid passageway for monitoring and controlling the temperature of the fluid within a predetermined range, said inner tube comprising an electric heater coil therein, a helically coiled wire interposed between said inner tube and said outer tube, the outer tube surrounded by insulation (column 3, lines 45-50). Though not explicitly disclosed,

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the microprocessor controller is common practice and is considered to be implicitly disclosed based on the description of the temperature control system of Lehrke. It is noted that in the art of heating thermistors, resistance temperature sensors and thermocouples are considered to be equivalents under the doctrine of equivalents and are therefore included in the disclosure of Lehrke.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lehrke in view of Chen et al. (US 6068703).

Lehrke discloses a fluid heat exchanger comprising an inside tube, a concentrically surrounding outside tube defining an small passageway of annular cross section, a temperature control system comprising a thermistor in the fluid passageway for monitoring and controlling the temperature of the fluid within a predetermined range, said inner tube comprising an electric heater coil therein, a helically coiled wire interposed between said inner tube and said outer tube. Lehrke does not explicitly disclose a electropolished finish to the surfaces of the fluid channel.

Chen discloses a fluid mixing device having electropolished surfaces in contact with the fluids in order to remove undesired surface irregularities along the fluid flow path. It would have been obvious to one of ordinary skill in the art at the time the invention was made, in view of Chen, to modify the device of Lehrke to provide electropolished surfaces in order to remove

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undesired surface irregularities along the fluid flow path allowing for an ultra pure means of heating the fluid.

Claims 12, 15, 16, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lehrke.

Lehrke disclose the claimed invention except the raised portions on the inner and outer tubes extending into the fluid passageway. It is noted that Lehrke discloses a helical wire interposed between the inner and outer tubes, applicant claims a helical raised region along the tubes, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the helical wire as an integral part of the tube surfaces in order to reduce the steps in manufacturing the device since it has been held that forming in one piece an article which has formerly been in two pieces and put together involves only routine skill in the art. Howard v. Detroit Stove Works, 150 U.S. 164 (1893).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lehrke in view of Juliano (US 6104011).

Lehrke discloses a fluid heat exchanger comprising an inside tube, a concentrically surrounding outside tube defining an small passageway of annular cross section, a temperature control system comprising a thermistor in the fluid passageway for monitoring and controlling the temperature of the fluid within a predetermined range, said inner tube comprising an electric heater coil therein, a helically coiled wire interposed between said inner tube and said outer tube. Lehrke does not explicitly disclose a temperature sensor within the inner tube.

Juliano discloses a temperature sensor within an inner tube. It would have been obvious to one of ordinary skill in the art at the time the invention was made, in view of Juliano, to modify the

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device of Lehrke to include the temperature sensor within the inner tube such that the heating element and temperature control were structurally one unit thereby easing construction of the device.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lehrke in view of Balma et al. (US 5178651).

Lehrke discloses a fluid heat exchanger comprising an inside tube, a concentrically surrounding outside tube defining an small passageway of annular cross section, a temperature control system comprising a thermistor in the fluid passageway for monitoring and controlling the temperature of the fluid within a predetermined range, said inner tube comprising an electric heater coil therein, a helically coiled wire interposed between said inner tube and said outer tube. Lehrke does not explicitly disclose the temperature sensor positioned in a raised region of the outer tube. Balma discloses the thermocouple positioned in a raised region on the inner surface of the outer tube of a fluid heating device. It would have been obvious to one of ordinary skill in the art at the time the invention was made, in view of Balma, to modify the device of Lehrke to provide a temperature sensor in a raised region on the inner surface of the outer tube to provide a means of sensing the temperature at a location intermediate the ends of the fluid path.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thor S. Campbell whose telephone number is 703-306-9042. The examiner can normally be reached on Tue-Fri 5:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa Walberg can be reached on 703-308-1327. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

TSC  
February 5, 2003

A handwritten signature in black ink, appearing to read 'TSC', with a stylized flourish at the end.

**THOR CAMPBELL  
PATENT EXAMINER**